



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>





600016541N

B. 69. C. 29.



E. BIBL. RADCL.

*14.
C. 2.
Apr.*

59. C.

19129

d

33

2

A

MONOGRAPH

ON THE

BRITISH GRASSES.

By GEORGE GRAVES, F.L.S.

EDITOR OF

THE NEW EDITION OF CURTIS'S FLORA LONDINENSIS;

AUTHOR OF BRITISH ORNITHOLOGY, &c.

London :

PRINTED FOR THE AUTHOR,

BATH PLACE, PECKHAM,

BY W. & S. GRAVES, SHERBORNE-LANE.

1822.

PREFACE.

WHEN it is considered how large a proportion of human sustenance is derived either immediately or remotely from the extensive Family of Grasses, it cannot but be a matter of surprise that so few of these indigenous to Great Britain have engaged the attention of the Agriculturist.

The difficulty of distinguishing the Grasses from each other, has, without doubt, proved one grand obstacle, from the great similarity that prevails throughout the whole tribe, so that it requires no small share of Botanical acumen, to know some of the Species apart. This has tended to keep the subject in considerable obscurity; yet, as so many of our countrymen depend, in a great measure, upon the produce of their meadows and pastures for support, it is to be regretted that so few have interested themselves about the quality or nature of the Grasses they cultivate.

Much labour and investigation have been bestowed by Botanists in assigning to the different individuals their allotted or proper stations in the various systems, while comparatively but little

has been done towards the useful application of the different kinds. The names of Stillingfleet, Curtis, and others, are exceptions, and the service they have respectively rendered to Agriculture will endear their names to posterity. From the exertions of Mr. Curtis, a few of our more valuable Grasses have become generally known and cultivated, yet much remains in obscurity with respect to the bulk of our Native Grasses, for it is hardly to be supposed that out of perhaps nearly One Hundred and Fifty Species only Six or Eight should be applicable to agricultural purposes.

It is our intention to give a Figure of each Species of Grass common to Great Britain, that the Cultivator may not only become acquainted with those capable of being rendered beneficial to him, but also with those against the introduction of which, he should be put on his guard, either from their possessing noxious or injurious properties, or from the scantiness of their produce, occupying the room that might be advantageously filled by more productive and consequently more beneficial Species. In the descriptions, no more of the Botanical History (if we may be allowed the phrase) will be introduced than will be sufficient to point out or elucidate the Species: many of the descriptions will be abridged from the new Edition of the *Flora Londinensis*, from manuscripts of the late Mr. Curtis, or written expressly for this Work; and the Figures, as far as the page allows, will be of the natural size, and where the whole of a panicle or leaf cannot be introduced, so much will be given, of the full size of the plant, as will enable the observer to identify the Species.

The difficulty that persons, not in the practice of botanically

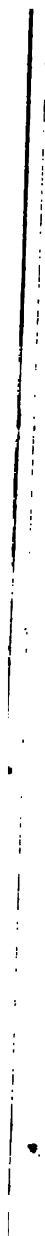
v

examining the various kinds of Grasses, labour under, in attempting to define the different Genera, we have endeavoured to remove, as far as correct magnified Figures of the constituent parts of each Genus will tend so to do: these Figures with their descriptions we shall reserve to the latter part of the Work.

As this Work has been undertaken with a view to render the study of this most useful Family of Plants more extensive and less difficult to be understood, we have as much as possible divested it of scientific or technical language, retaining only so much as is absolutely requisite in describing each Species; and we purpose, at the conclusion, to give a Glossary of the Botanical terms used, which may be considered rather the business of the Botanist than of the Farmer to understand.

From the encouragement and assistance the Author has received from various practical Agriculturists, he trusts this Work will be found to contain much useful and valuable information, capable of being practically applied in the various departments of Husbandry.

Peckham, March 18th, 1822.





Pub. by G. G. Brown, Perham, April, 1922.

ERIPHORUM VAGINATUM.

Single-headed, or Hare's-Tail Cotton Grass.

CLASS AND ORDER. TRIANDRIA MONOGYNIA.

NATURAL ORDER.

Class II. MONOCOTYLEDONS. Order II. CYPERACEÆ.

CHARACTER OF THE ORDER.

Flowers supported by a chaffy scale, (glume). Perianth none, or composed of bristles, rarely a membrane, one to three leaved. Stamens hypogynous, generally three. Anthers inserted by their base. Ovary superior, with one erect ovule. Style single, generally trisid, rarely bisid. Stigmas entire. Achenium crustaceous, or bony. Embryo lenticular, enclosed in the base of a copious albumen. Plumule included in the substance of the Embryo.

Stems slender, triangular, or with an indefinite number of angles, usually without joints, sometimes jointed and branched. Leaves with an entire sheath, which is sometimes fissile when old: the floral ones generally destitute of sheath. Scales disposed in spikes, those at the bottom without flowers. Brown.

GENERIC CHARACTER.

Scales imbricating the spike on all sides: Corolla none: Seed covered with long silky hairs which spring from the base.

SPECIFIC CHARACTER.

Eriophorum vaginatum. Stalks sheathed, three sided, spike solitary, ovate.
Lin. Sp. pl. 76. Curtis Fl. Lond. ed. 2. v. 2. Smith Fl. Brit. p. 59.
Aiton Hort. Kew. ed. 2. v. 1. p. 133. Hooker Fl. Scot. p. 20.

ROOT horizontal, brown, with numerous long fibres; stalks many from the same root; when the flowers first expand six or eight inches in height, afterwards growing to eighteen inches or two feet, upright, smooth, having three or four joints, below cylindrical, above becoming obsoletely three-sided, and sheathed nearly to the apex: Leaves longer than the flowering stems, smooth, convex on one side, on the other side slightly channelled, sheathed a considerable way: Sheaths inflated, membranous,

TAB. I.

brown, striated: Spike solitary, many flowered: Glumes lead colour, whitish at the base, composed of a thin membrane; the inferior ones sterile, slightly spreading, the others erect. *Flora Lond.*

This elegant Grass is a much scarcer plant in the vicinity of London than the *angustifolium*, though in other parts of Great Britain it is equally abundant. It differs from the *angustifolium* in having its foliage narrower and longer, and it forms much closer tufts than that species, its roots are not creeping but thickly matted, and it has never more than one spike.

The Agriculturist is but little interested in this beautiful family of Grasses, as they all affect boggy or moorish situations, mostly such as are unfit for the purposes of cultivation, and when transplanted into a different soil they soon perish. In the north of England and in Scotland this species is very common, particularly in the turfy bogs on many of the more elevated mountains; it is a favourite food with sheep, but the produce is very scanty, the plant running principally into stems, which are left untouched: its leaves are sweet and succulent; but there is little prospect of its ever being cultivated.

The silky substance enveloping the seed has been attempted to be manufactured into cloth, paper, &c. but from the brittleness of its texture most of the attempts have failed.



ERIOPHORUM ANGUSTIFOLIUM.

Common or Many-headed Cotton-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER.

See TAB. I.

SPECIFIC CHARACTER.

ERIOPHORUM angustifolium. Stalks obsoletely three-sided; leaves three-sided, channelled; spikes pedunculated. Smith FL. Brit. p. 69. Curtis FL. Lond. ed. 2. v. 2. Aiton Hort. Kew. ed. 2. v. I. p. 133. Hooker FL. Scot. p. 21.

ROOT perennial, creeping, of a deep chestnut colour, furnished with numerous pale fibres: Stalks mostly solitary, from nine inches to a foot or more in height, upright, smooth, round, usually two jointed, the joints slightly projecting: Leaves completely sheathing the stems, seven or eight inches long, tapering to a point, convex on one side, and concave on the other, the upper leaves flatter, much shorter, and manifestly keeled. Floral leaves of unequal lengths, spikes several, from two to seven, at first upright, afterwards pendulous, covered on all sides with imbricated scales, of an ovate oblong shape, flat and bent a little, membranous, loose, running out to a point, after flowering the stem increases in height to eighteen inches or two feet. *Flora Lond.*

Sheep and cattle readily devour this grass in its young state, but constantly refuse the flowering stems: it usually grows in marshy bogs, and, where the soil is light, often forms the principal produce, as from its creeping root it rapidly increases; it is impatient of moisture, and in dry seasons it frequently happens that the flowering stalks are the only parts of the plant that have not become brown and withered.

Considered in an agricultural light, this Grass is not

TAB. 4.

worth cultivating, as its produce is but trifling, and numerous other grasses of superior qualities will grow in the same situations. Should our Manufacturers be able to overcome the brittle texture of its cottony heads, this plant might then answer the purpose of the grower, as the quantity of this substance is considerable. In some parts of Germany the down has been made into paper, wicks for candles, &c.; and Linneas remarks, that the Swedish peasants stuff their pillows with it in the place of feathers.

This plant is of common occurrence in most of the boggy parts of Great Britain; it flowers in April, and produces its downy seeds in July and August.



PANICUM VERTICILLATUM.

Rough Panic-Grass.

CLASS AND ORDER. TRIANDRIA DIGYNIA.

NATURAL ORDER.

Class II. MONOCOTYLEDONS. Order I. GRAMINEÆ.

CHARACTER OF THE ORDER.

Glume (Calix *Lin.*) one, two, or many flowered, mostly of two valves, rarely of one or wanting. *Perianth* (Corolla *Lin.*) glumaceous, one or two valved. *Stamens* hypogynous. *Anthers* versatile. *Ovary* superior, with one ovule. *Styles* two, rarely one or three. *Stygmas* plumose. *Pericarp* a *Caryopsis* or *Utriculus*. *Embryo* scutelliform, lateral, on the outside of the base of a farinaceous copious *albumen*. *Plumule* naked. *Stems* fistulose, generally simple and herbaceous, sometimes branched, rarely shrubby. *Leaves* one to each joint, with a *sheath* slit longitudinally on one side, having a membranous appendage (*ligule*) at its summit. *Flowers* small, paniced or spiked. *Brown*.

GENERIC CHARACTER.

Calis of three valves, single flowered, the third valve very small. *Seed* invested with the permanent hardened *Corolla*.

SPECIFIC CHARACTER.

Panicum verticillatum. Spike cylindrical, spikelets in fours, involucre one flowered, with two serrated bristles, culms diffuse. *Lin. Sp. Pl.* 82. *Curtis Flora Lond.* ed. 1. *Smith Flora Brit.* p. 64. *Aiton Hort. Kew.* ed. 2. v. 1. p. 139.

ROOT annual, fibrous: Stalks several, spreading, leafy, smooth, two feet high: Leaves rough on the edges, stipules short: Spikes two to four inches long, the lower florets more distant: Bristles of the involucre serrated; the serratures reflexed. *Flora Lond.*

This is nearly allied to the following species, and when in a dwarf state greatly resembles it, but may be readily distinguished from that by the bristles on the involucre,

TAB. 10.

being toothed, which is particularly observable if they be drawn over the back of the hand. It is subject to considerable variation in the colour of its leaves and spikes; in some soils and situations the foliage as well as the spike being strongly tinged with red.

A doubtful native, being generally found in cultivated fields and garden grounds, it is not of very common occurrence, and is rather to be considered as a weed, though one by no means possessing noxious qualities.

The seeds are large, and are greedily devoured by small birds; but the produce of herbage is so small that it is beneath the notice of the Agriculturist.



PANICUM VIRIDE.

Green Panic-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER.

See TAB. 10.

SPECIFIC CHARACTER.

PANICUM *viride*. Spike cylindrical, spikelets crowded, involucre two-flowered, rough with many bristles; flowers smoothish. Lin. Sp. Pl. p. 83. Fl. Lond. ed. 2. v. 2. Smith Fl. Brit. p. 65. Aiton Hort. Kew. ed. 2. v. 1. p. 140.

ROOT annual, fibrous: Stalks upright, smooth, simple, sometimes branched, furnished with four or five joints: Leaves four to six inches long, the third or fourth of an inch broad; in exposed dry situations often of a deep blood-red colour: Sheath of the leaves striated, smooth, terminated at the inner base of the leaf, instead of a membrane, by very fine hairs, which occupy the edges of the sheath on the upper part, and of the leaves at their base: Spike simple, round, cylindrical, of an inch and a half or two inches in length, often, as remarked, of the leaves, becoming of a deep red or purple brown colour, generally yellowish green, with reddish or yellowish hairs, which, when magnified, appear furnished with numerous small upright teeth or prickles which are soft to the touch. *Flora Lond.*

The name of *viride*, or green, is often badly applied to this Grass, as like the preceeding, in exposed dry situations, it often assumes a deep red colour; the character by which this may be always detected, is the upright teeth or serratures of the bristles.

Agriculturally considered, it ranks with weeds, though quite innoxious; the seeds are favourites with sparrows and other small birds, and the whole family, when cultivated, require to be carefully protected from them.

TAB. 11.

PANICUM CRUS-GALLI.

Loose Panic-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER,
See TAB. 10.

SPECIFIC CHARACTER.

Panicum crus-galli. Spikes alternate and in pairs; spikelets sub-divided; glumes of the calix awned, hispid, rather fine angled. Lin. Sp. Pl. p. 83. Flora Lond. ed. 2. v. 1. Smith Fl. Brit. p. 65. Aiton Hort. Kew. ed. 2. v. 1. p. 141.

ROOT annual, fibrous: Stalks several, at first procumbent or oblique, finally nearly upright, from one to two feet high, furnished with three or four joints: Leaves varying from three inches to nearly a foot long, pointed, smooth, the edges very finely toothed, and about the mouth of the sheath hairy: Membrane wanting: Sheath large, striated and compressed: Flowers in a panicle, growing one way, turgid; panicle four to six inches long, composed of many spikes, often twelve, generally simple, sometimes branched, and opposite, the lowermost an inch and a half in length, longer and further apart than any of the rest: Spike stalks, five angled, the fifth less perceptible than the others, bristly or hairy at the base of the spike. *Flora Lond.*

This Grass is of rare occurrence, and like the two preceding ones is usually found in cultivated fields and garden grounds; a variety is sometimes met with having very long awns.

Cows and sheep readily eat it in its young state, but when full grown the foliage becomes hard and dry. The seeds are large, very numerous, and ripen in July and August.

TAB. 12.

TAB. 13.



Pub. by G. Graves, Peckham, Jan. 1, 1823.

PANICUM SANGUINALE.

Cock's-Foot Panic-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER.

See TAB. 10.

SPECIFIC CHARACTER.

Spike digitate, knotty at the base on the inside; flowers in pairs, without awns; leaves and sheath hairy.

PANICUM *sanguinale*. Lin. Sp. pl. p. 85. Fl. Lond. ed. 2. v. 1. Smith Fl. Brit. p. 65. Aiton Hort. Kew. ed 2. v. 1. p. 142.

ROOT fibrous, annual: Stalks from nine to sixteen inches in length, sometimes branched, bending upwards, crooked, very slender and weak, generally furnished with four joints: Leaves from one to two inches long, pointed, often waved on one side, and sparingly beset with hairs on both sides: Sheaths striated, very hairy; hairs springing from minute elevated points: Calix of three unequal valves; the outer valve an extremely minute scale, the one opposite to it twice its size, and pubescent on its margin; innermost one thrice the size of the second, rigid, ribbed, and pubescent at the margins: Spikes three, four, or five together, placed on the top of the stems, branching out like fingers, from an inch and a half to four inches long, slender, all proceeding from the same point. *Flora Lond.*

This curious Grass is but sparingly found in situations similar to those the preceding species affect; it is common to most parts of Europe, and is also found in Africa and America, yet in Great Britain is not generally diffused.

It has acquired the name of *Sanguinale*, from an idle trick practiced by boys in Germany, of tickling their nostrils with the spicules of this Grass, until they draw blood.

Flowers in July and August. Its seeds are much smaller than those of the other British species; and the Grass possesses no properties likely to benefit the Agriculturist.

TAB. 13.

Tab. 10.



Tab. 10. 1. *Grasses* 2. *Grasses*

ANTHOXANTHUM ODORATUM.

Sweet-scented Vernal-Grass.

CLASS AND ORDER. DIANDRIA MONOGYNIA.

NATURAL ORDER.

Class. I. MONOCOTYLEDONS. Order I. GRAMINEÆ.

GENERIC CHARACTER.

Calix two-valved, one flowered. *Corolla* glume two-valved, exterior valve awned, interior valve small, without awn.

SPECIFIC CHARACTER.

ANTHOXANTHUM odoratum. Spike oblong; flowers on short foot-stalks, and longer than the awns. *Lin. Sp. Pl.* p. 40. *Curtis Flora Lond.* ed. 1. *Smith Flora Brit.* p. 31. *Aiton Hort. Kew.* ed. 2. vol. 1. p. 68. *Hooker Fl. Scot.* p. 11.

ROOT perennial, fibrous: Stalks at first oblique, becoming upright, from eight to twelve inches high: Leaves slightly pubescent, often curled, furnished with a membrane at the base: Sheath striated, smooth: Spike loose, oblong, and smooth: Stamens two: Filaments very long: Anthers long, purple, and forked at each end. *Flora Lond.*

This is distinguished from all our Native Grasses, by its being furnished with only two stamens, on which account it has been separated by Botanists from the other Grasses, and placed in the Class DIANDRIA.

The Sweet-scented Vernal Grass is found abundantly in almost every soil and situation, in moist shady woods, dry, exposed, and almost barren moors, but most abundantly in rich meadows: it flowers earlier than most British Grasses; if the season be mild it generally blooms about the middle of April, or at latest the beginning of May, and its seed is ripe early in June. From its being early and producing

TAB. 16.

a good crop of herbage which is readily consumed by all kinds of cattle, it is a very valuable Grass to the Farmer and Grazier, the more so as it succeeds well in almost every kind of soil.

It does not produce much seed, and this is frequently injured by the maggot of some small fly; but as the plants are easily procured, it is worth cultivating, if only for the purpose of seed, which frequently sells for one Guinea a pound. Plants obtained early in April, and divided into as many slips as can be taken off with fibres, should be planted out in a piece of good ground, rather moist than dry, and carefully kept free from weeds; if the season prove dry they should be regularly watered, and they will mostly throw up flower-stems towards the end of May or beginning of June, and the seed generally ripens about one month after the flowers expand: the seed should be carefully cut off and dried, and should be sown in the following Autumn. The plants, from which the seeds have been cut off, will, shortly after flowering, bear dividing a second time, and again early in September, so that a very considerable quantity may easily be obtained with but little trouble.

The Farmer may readily detect this Grass by the scent of its foliage when bruised, which is very similar to that of the Woodruff; and it acquires its name of *odoratum*, or sweet-scented, from the agreeable scent of new hay, which arises principally from this Grass.

Tab. 21.



Pub. by G. Orms Packham, Apr. 1. 1872.

ALOPECURUS PRATENSIS.

Meadow Fox-tail-Grass.

CLASS AND ORDER. TRIANDRIA DIGYNIA.

NATURAL ORDER.

Class II. MONOCOTYLEDONS. Order I. GRAMINEÆ.

GENERIC CHARACTER.

Calix of two valves, valves nearly equal, one flowered. *Corolla* of one valve, the valve awned at the base.

SPECIFIC CHARACTER.

Alopecurus pratensis. Culm erect, smooth; panicle spiked, cylindrical, obtuse; glumes of the Calix hairy, united at their base. Lin. Sp. Pl. p. 88. Curtis Flora Lond. ed. 1. Smith Flora Brit. p. 72. Aiton Hort. Kew. ed. 2. vol. 1. p. 146. Hooker Fl. Scot. p. 21.

ROOT perennial, fibrous: Stalks from a foot and a half to three feet high, upright, finely grooved, often throwing out fibres at the base of the stems, or from the bottom joints: Leaves from four to nine inches long, broad, and gradually tapering to a point: Sheaths striated, smooth, on the upper part of the stem somewhat swollen; membrane or ligule short and blunt: Spike an inch and a half to two inches or more in length; round, cylindrical, soft and blunt. *Flora Lond.*

In none of our native Grasses is the interest of the Farmer and Grazier more nearly concerned than in Meadow Fox-tail-Grass, as it is not only one of the

TAB. 21.

earliest, but one of the most productive of our indigenous Grasses. It usually comes into flower early in May, when its silvery heads are conspicuous in almost every meadow, and produces ripe seed in June; this plant often blooms twice or more in a season.

The Meadow Fox-tail-Grass has the power of vegetating very quickly, and will bear the scythe twice in a year to advantage; its stalks are strong, its leaves soft and juicy, their taste sweet and agreeable, and when made into hay, have neither the hardness of straw, nor any unpleasant taste, as is the case with some of the more productive but coarse Grasses. It shoots very rapidly after mowing, producing a plentiful aftermath; and where the soil is rich, and two crops are not thought too much for it to bear, this of all the British Grasses is the best adapted for the purpose, and ought to form a principal part of the crop; its foliage often appears coarse, but this must be the case, as no Grass can be productive that is not so in some degree; if mown early, just as it comes into bloom, the hay will not be coarse.

Meadows that are rather moist produce this Grass in the greatest profusion, as it does not thrive so well in soils that are very wet or dry; and its early foliage is greedily devoured by all kinds of cattle. It is a received opinion, that the wool on sheep that feed in meadows abounding in the Meadow Fox-tail-Grass, does not improve in fineness; but they are particularly partial to it both green and dry.

As it naturally prefers a moist soil, it is best adapted for the improvement of such wet meadows as have been drained of their superfluous moisture, or to improve meadows that have a moist bottom, and are not subject to be burnt up in dry summers; in such situations, if due attention be paid in its introduction, it soon forms itself into a close thick turf, and from its rapidity of growth,

will maintain itself against many of the more powerfully creeping kinds.

It is easily distinguished by its long soft spike, and the breadth of its leaves; it produces a considerable quantity of seed, which is easily collected, but the seed is very frequently destroyed by a small orange coloured maggot, which feeds on the embryos of the seed.

This Grass being of so much consequence, it is well worth the attention of the Agriculturist to procure it free from any mixture, either of grass or other seeds; for this purpose a small piece of ground should be selected, that is moist but not wet, and the same care should be taken to get the ground into good condition, as if it was for the purpose of a garden; if a few plants are procured early in the spring, and being separated in as many slips as they can be divided into, each having some fibres, which should be planted in rows eighteen inches asunder, and be carefully freed from weeds, as they grow very fast, and usually produce spikes twice in the summer; a very small piece of land will suffice for the obtaining a considerable quantity of the seed; the gathering of the seed is easily effected as the spikes are large, they should be cut off, and the seeds rubbed out with the hands, and if there be any considerable quantity it should be spread out and dried, at the same time observing if any insects are among it, which of course should be carefully removed.

The best time for sowing this seed is toward the end of August or beginning of September, before the autumnal rains set in; the proportion of seed to an acre will depend considerably upon what other Grasses or Plants are intended to be introduced. As a general remark we should recommend that this Grass form at least one-eighth part in all new made meadows or pastures.

This Grass compared with Ray or Rye-Grass is superior to it in its nutritive properties, in the proportion of

seventeen to five; added to which, its holding possession of the soil so much better than that Grass, gives a most decided advantage in all points of view; and would the Meadow Fox-tail-Grass bear the droughts of summer, it would in our opinion have the superiority over every other cultivated species.



Publ. by O. Ormrod, Peckham, May 1. 1872.

ALOPECURUS AGRESTIS.

Slender Fox-tail-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER,
See TAB. 21.

SPECIFIC CHARACTER.

ALOPECURUS *agrestis*. Culm erect, roughish above; spike simple, attenuated; calicine glumes united at their base, nearly smooth; keel dilated.

Lin. Sp. Pl. p. 89. Smith Fl. Brit. p. 72. Aiton Hort. Kew. ed. 2.
v. 1. p. 146 Hooker Fl. Scot. p. 22.

ALOPECURUS *myosuroides*. Curtis Flora Lond. ed. 1.

ROOT annual, fibrous: Stalks a foot to eighteen inches high, upright, often crooked at the bottom, stiffish, round, jointed; the joints smooth and purple: Leaves about three inches long, smooth, striated, furnished at bottom with an obtuse membrane: Spike long, slender, purple on the exposed side. *Flora Lond.*

This species is readily distinguished from the others of the same genus by its long slender spike, which tapers to a point; and has some resemblance to a mouse's tail, from which it acquired the name of *myosuroides*.

The colour of the spike is generally purplish, though it is sometimes met with of a pale yellow, almost white; but the form of the spike will readily point out the species. In cultivated fields, among rubbish, by the sides of roads, and on banks, this Grass is extremely common, but is rarely found in meadows. It flowers early and continues in bloom till Autumn: is subject to the disease called **ERGOT**.

Though this species often forms large tufts, and is not rejected by cattle, its merits are not sufficient to recommend it to the attention of the Farmer or Grazier.

TAB. 23.

ALOPECURUS GENICULATUS.

Floating Fox-tail-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER.

See TAB. 21.

SPECIFIC CHARACTER.

Alopecurus geniculatus. Culm ascending, bent at the joints; spike cylindrical, obtuse; calicine glumes united at their base, hairy, shorter than the awn. Lin. Sp. Pl. p. 89. Curtis Fl. Lond. ed. 1. Smith Fl. Brit. p. 74. Aiton Hort. Kew. ed. 2. v. 1. p. 146. Hooker Fl. Scot. p. 22.

ROOT perennial, fibrous: Stalks several, from one to two or three feet in length; the lower joints procumbent and often creeping, jointed, crooked, above naked and striated, branched; the base frequently in dry situations becoming bulbous: Leaves striated, upper side slightly rough, beneath smooth; the uppermost leaves an inch or two inches long, often crimped at the edges: Membrane ovate, and pointed: Sheaths smooth, striated, and swollen; Spike an inch or more in length, usually cylindrical, but varying considerably in form and colour, sometimes tapering to a point, of a green, purple, and sometimes of a black colour. *Flora Lond.*

This Grass usually affects moist or wet situations, as the sides of streams, ditches, or water courses, and when its shoots make their way into the water, they will extend to the length of three or four feet, floating on the water. The stalks at first are procumbent at the base, and spreading themselves on the ground, extend a foot or more in length, before they become upright. The spikes often assume a black colour, and are known to Farmers in some parts of the country by the name of Black Grass.

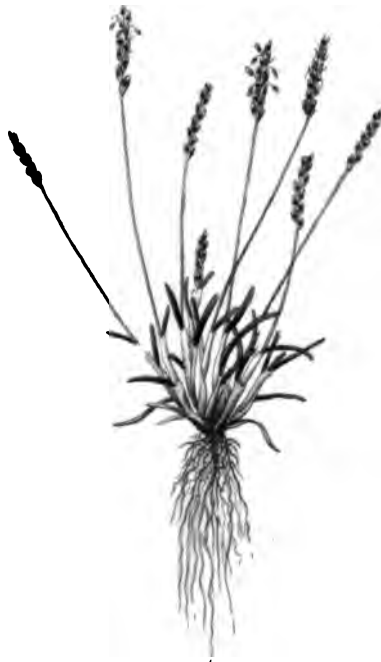
Though eaten readily by cattle, this cannot be recommended as a profitable Grass, notwithstanding it is productive; as to attain its full size, it requires a soil so wet as to exclude all others but the Aquatic Grasses.

TAB. 24.



— *Phragmites communis* —

Tab. 28.



Pub. by G. Orver, Peckham, May 1 1822.

KNAPPIA AGROSTIDEA.

Early Knappia.

CLASS AND ORDER. TRIANDRIA DIGYNIA.

NATURAL ORDER.

Class I. MONOCOTYLEDONS. Order I. GRAMINEÆ.

GENERIC CHARACTER.

Calix two-valved; valves equal, truncated, one flowered. *Corolla* two-valved, inner valve smallest, abrupt, very hairy.

SPECIFIC CHARACTER.

KNAPPIA agrostidea. Flora Lond. v. 4. tab. 61.

AGROSTIS minima. Linn. Sp. Pl. p. 93. Smith Fl. Brit. p. 82. Aiton Hort. Kew. ed. 2. v. 1. p. 149.

ROOT annual, fibrous: Stems two to three inches high, erect, simple, at the base covered with the sheaths of the leaves: Leaves few, half an inch long, obtuse, channelled, much sheathing at the base: Sheaths the length of the leaves, inflated, membranaceous, almost white: Membrane short, bifid: Spike composed of eight to ten flowers, which grow in a loose spike, mostly placed alternately. *Flora Lond.*

The present is the smallest of the British Grasses, seldom exceeding our Figure in size: it is of rare occurrence, and seems to be principally confined to sandy spots not far from the sea-coast in some parts of Wales: flowers in April and May. As a curious and interesting plant, this beautiful little Grass merits the notice of the Botanist, beyond which it has no pretensions to the care of the cultivator.

TAB. 28.



Stenotaphrum secundatum May 1. 1822.

MILLIUM EFFUSUM.

Spreading Millet-Grass.

CLASS AND ORDER. TRIANDRIA DIGYNIA.

NATURAL ORDER.

Class I. MONOCOTYLEDONS. Order I. GRAMINEÆ.

GENERIC CHARACTER.

Calix two valved, ventricose. *Corolla* two valved, one valve smaller than the other. *Seed* covered with the permanent corolla.

SPECIFIC CHARACTER.

MILLIUM effusum. Flowers loosely paniced, awaless. Lin. Sp. pl. p. 90.
Curtis Flora Lond. ed. 2. v. 2. Smith Flora Brit. p. 75. Aiton
Hort. Kew. ed 2. v. 1. p. 147. Hooker Flora Scot, p. 24.

ROOT perennial, creeping: Stalks slender, three or four feet high, furnished with four or five joints, and as many leaves which arise from the joints: Leaves from four inches to a foot in length, slightly rough on the upper and under sides as well as the edges, discoverable if drawn backward through the hand, terminating in a fine point: Sheath striated, smooth, at the inner base of the leaf terminating in a fine membrane, which is often jagged: Panicle varying from four or five inches to a foot or more in length, spreading and loose; the branches of the panicle are crooked and very slender. *Flora Lond.*

This species of Millet has some resemblance to the Panic-Grasses, but is distinguished by having a calix of two valves only; from the other English Grasses it is easily discovered by the delicacy and diffuseness of its panicle, and by its place of growth.

In the woods round London it attains the height of four feet and upwards; it prefers a shady and rather moist soil,

TAB. 31.

and, possessing a creeping root, is readily propagated. It flowers in May, and possesses a similar fragrance with the Sweet-scented Vernal-Grass.

It classes among weeds, as, though its foliage is eaten by cattle, the quantity of herbage it produces is too small to render it an object of attention to the Farmer ; and from its creeping root would, if introduced into meadows, occupy the place of much more productive species.

Tab. 33.



Tab. 33. *Grasses, Peckham, June 11*

AGROSTIS SPICA-VENTI.

Silky Bent-Grass.

CLASS AND ORDER. TRIANDRIA DYGINIA.

NATURAL ORDER.

Class II. MONOCOTYLEDONS. Order I. GRAMINEÆ.

GENERIC CHARACTER.

Calix of two valves; Valves acute, compressed, awnless. Corolla shorter than the calix, slightly hairy at the base. Seed free.

SPECIFIC CHARACTER.

Agrostis Spica-venti. Outer valve of the Corolla with a very long, straight, stiff Awn, growing from beneath the point; Panicle spreading. Smith Fl. Brit. p. 77. Aiton Hort. Kew. ed. 2. v. 1. p. 148.

ROOT fibrous, annual: Stalks numerous, three feet or more in height, leafy, smooth: Leaves numerous, slightly pubescent above: Membrane cut at the extremity: Panicle large, often growing from one side: Branches growing nearly in whirls, spreading, unequal, many-flowered, angular, rough.

The present is the most easily detected of all the British species of this intricate Genus; its large panicle, the unusual length of the awns, joined to its annual root, readily point out the *Spica-venti*. On the western side of London we find this species but rarely, and as it were accidentally in brickfields, and but seldom among corn; whilst on the eastern side, it is found plentifully in corn fields.

It flowers in July, and ripens its seeds in August.

From the trifling produce of most species of this family, they can only be considered as weeds, occupying the room of more productive, and consequently more valuable kinds of Grass. The foliage of the present is readily eaten by Cattle; but, for the above reason, is of little consequence to the Agriculturist.

Tab. 33.

AGROSTIS SETACEA.

Bristly leaved Bent-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER.

See TAB. 33.

SPECIFIC CHARACTER.

AGROSTIS setacea Branches of the Panicle short, erect ; valves of the Corolla unequal, lanceolate, rough at the back ; outer valve of the Corolla with a longish awn from the base, the inner one ovate, very minute ; Leaves setaceous. Curtis Fl. Lond. ed. 1. v. 2. Smith Fl. Brit. p. 79. Aiton Hort. Kew. ed. 2. v. 1. p. 149. Hooker Fl. Scot. P. 1. p. 25.

ROOT perennial, fibrous : Leaves next the root numerous, growing in bundles, glaucous, rigid, bristle-shaped, grooved on one side, at the base enclosed in sheaths, furnished with a white erect membrane ; those of the stalk few, subulate, a little broader than the radical leaves, upright, an inch and a half in length : Stems several, from a span to a foot or more in length, nearly upright, having usually three knots. *Flora Lond.*

It flowers in July, and ripens its seed in August.

It has but little to recommend it to the notice of the Agriculturist, its produce being small ; but where it abounds, it probably constitutes much of the Sheep feed.

Tab. 34.





AIRA AQUATICA.

Water Hair-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER.

See TAB. 38.

SPECIFIC CHARACTER.

Aira aquatica. Panicle spreading; glumes obtuse, florets longer than the Calix. Curtis Flora Lond. ed. 2. v. 3. Smith Flora Brit. p. 84. Aitn. Hort. Kew. ed. 2. v. 1. p. 151. Hooker Flora Scot. p. 29.

ROOT perennial: Stalks creeping at the bottom, from whence issue young shoots like the Flote Meadow-Grass, which run out to a considerable distance, and send down small white roots from the joints; it then becomes erect, and attains to a foot or more in height, is round, hollow, and tender: Leaves broad, tender, smooth, carinated; the sheaths striated, red at the bottom: Panicle upright, spreading, loose, branches several, issuing from one point, often crooked: Spicules generally containing two flowers, one of which is sessile, the other stands on a foot-stalk.
Flora. Lond.

This is the sweetest of all the British Grasses, its herbage is extremely succulent and tender, is much relished by Cattle, but being an aquatic is not cultivatable. It grows abundantly in gently flowing streams, and wet boggy meadows; the bottom of the stalks usually creep on the ground, and when they get into the water run out to a considerable distance, throwing out shoots and roots as it passes along. It flowers in June and July, and is to be found in most wet and boggy situations. Compared with the Flote Meadow-Grass, this is very far inferior, as its produce of herbage

TAB. 39.

is scanty, still from its great sweetness it is sought out by cattle in the summer months in preference to almost every other kind. The seeds are devoured by the larvæ of various species of flies, as also by different kinds of water fowl.



Ad. J. K. v. Pelt. in O. H. B. G.

PHLEUM ARENARIUM.

Sea Side Cat's-Tail-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER.

See TAB. 13.

SPECIFIC CHARACTER.

PHLEUM arenarium. Paniclespiked, oblong ovate; Calicine glumes lanceolate, acute, ciliated at the back. Hooker in Flora Lond. v. 4. Hooker. Flora Scot. P. 1. p. 24.

PHALARIS arenaria. Smith. Fl. Brit. p. 62. Aiton Hort. Kew. ed. 2. v. 1. p. 138.

ROOT annual, fibrous: Stalks from three to six inches long, simple, upright, often somewhat bent at the joints, smooth and leafy: Leaves about an inch long, acute, linear, the margin only rough: Sheaths long, inflated, quite smooth: Stipules linear, obtuse, slightly projecting: Panicle spiked, compact, oblong, oval, attenuated at the base. *Flora Lond.*

This diminutive Grass is found, in the spring, among sand, on the seacoast, but totally disappears on the approach of summer; from the smallness of its size, and the particular situation it affects, it does not merit the notice of the Agriculturist.

The seeds are large, and are eagerly sought for by small birds. It flowers the end of April or beginning of May, and ripens its seed early in June.

TAB. 12.

Tab. 44.



Probably Graves Packham May 1 1822.

ARIA PRÆCOX.

Early Hair-Grass

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER.

See TAB. 38.

SPECIFIC CHARACTER.

ARIA præcox. Leaves like bristles, sheaths angular, flowers in a spiked panicle, awn twisted, inserted below the middle, and longer than the calix. *Linn. Sp. Pl.* p. 97. *Flora Lond.* ed. 1. *Smith Fl. Brit.* p. 87. *Aiton Hort. Kew.* ed. 2. v. 1. p. 151. *Hooker Fl. Scot.* p. 30.

ROOT annual, fibrous: Stalks several, from two to six or seven inches high, round, smooth, upright: Leaves near the root linear, rolled up and withered; those on the stalk setaceous, the membrane or ligule large for the size of the leaf, long, white, surrounding the stem, very conspicuous in the young plant: Sheath finely grooved, and swollen a little in the middle: Panicle closed together, resembling a spike: Spicule containing two flowers, each of which is furnished with a crooked awn.

This diminutive species grows abundantly on dry heaths, walls, and sandy places; it flowers in April and May, and ripens its seeds in June.

Is too diminutive to be an object of attention to any but the Botanist, though it is said by some of the Continental Writers to acquire the height of fourteen inches, a size it rarely or ever attains in Great Britain.

TAB. 44.

ARIA CARYOPHYLLA.

Silver Hair-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER.

See TAB. 38.

SPECIFIC CHARACTER.

ARIA caryophylla. Leaves setaceous, panicle divaricate, florets awned, the awn inserted below the middle, jointed, longer than the calix. Lin. Sp. Pl. 97. Curtis Flora Lond. ed. 2. vol. 1. Smith Flora Brit. p. 88. Aiton Hort. Kew. ed. 2. vol. 1. p. 152. Hooker Fl. Scot. p. 30.

ROOT small, annual, fibrous: Stem upright, six to nine inches high, round, striated, leafy, with two or three joints: Leaves bristle shaped, short, rigid, membrane large, long, pointed, bifid; panicle spreading wide, foot stalks growing singly, long, branched, smooth. *Flora Lond.*

This elegant diminutive Grass grows in similar situations with the preceeding, but is not so abundantly met with. It produces its neat panicle in May and June, and, except during the flowering season, is very difficult to find.

When cultivated it grows to a much larger size than our figure represents it, and will form tufts of a considerable size, but it is too small to merit the notice of the Agriculturist.

TAB. 45.

Tab. 45.



Pub. by G. Steves & Co. London, May 1. 1872



5356 (n) was Rockham Bay, 1.1.52.

HOLCUS LANATUS.

Meadow Soft-Grass.

CLASS AND ORDER. TRIANDRIA DIGYNIA.

NATURAL ORDER.

Class I. MONOCOTYLEDONS. Order I. GRAMINEÆ.

GENERIC CHARACTER.

Calix two valved, two flowered. *Corolla* two valved, antheriferous floret awned. *Seed* free or covered with the *Corolla*.

SPECIFIC CHARACTER.

Holcus lanatus. Fertile flower, inferior, awnless; imperfect flower, antheriferous, and furnished with a recurved awn included in the *Calix*. Root fibrous, not creeping. Lin. Sp. pl. p. 1485. Curtis Flora Lond. ed. 1. Smith Flora Brit. p. 89. Hooker Flora Scot, p. 28.

ROOT perennial, not creeping: Stalks from two to three feet high, round, and sometimes throwing out fibres at the lower joints: Leaves flat, covered with a downy pubescence, which give them a hoary appearance. *Flora Lond.*

This species greatly resembles *H. mollis*, but the root will at all times point out the species: on the appearance of the flowering heads of the present plant, they are of a fine deep red colour on the side exposed to the sun; but, as the flowers begin to expand, this colour disappears; and when the flowers are fully opened, they become whitish; at first they droop, but when arrived at maturity they are upright.

In light boggy ground, this Grass will often become so thick and rank as to overpower and destroy most other plants. Various opinions have been held with respect to the merits of this species; some of the continental writers holding it in high estimation, while by others it is con-

sidered only as a troublesome weed, occupying the room of really valuable Grasses.

Eight years ago, a piece of boggy ground of about sixteen acres, that was usually overflowed the greater part of the year, was effectually drained for the purpose of bringing it into cultivation, and to effectually overcome the natural dampness of the situation, nearly three acres were dug out to the depth of six feet, and the soil thus obtained was scattered over the surrounding land, leaving the excavated part for fish-ponds, the proprietor was advised to sow the whole of the new made ground with the seeds of this plant, which he did, and the produce the following spring was very great, though cut before the Grass had thrown up its flowering stems. The season was fine, and the hay got up in most excellent order; but, to the no small mortification of the owner, neither his horses or cows would eat it, unless compelled by extreme hunger, and then it was evident it was with great dislike, so that the larger part was thrown into the cow-yard for the purpose of manure.

In the beginning of the following August a fresh crop was fit for the scythe; this was suffered to bloom before the aftermath was cut; the second crop was of greater weight than the former, and soon after it was off the ground a number of the cattle were turned in upon the land, but they would scarcely touch it; and, had it not been for some grass, which was laid down in turf round the ponds, they would have been almost starved.

Whether any improvement in the quality may be effected by a change of soil we cannot at present determine, but, to us, it appears one of the least promising to the Agriculturist.



HOLCUS MOLLIS

Creeping Soft Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER,

See TAB. 46.

SPECIFIC CHARACTER.

Holcus mollis. Root creeping; joints woolly, awn projecting beyond the Calix. Lin. Sp. pl. p. 1485. Curtis Flora Lond. ed. 1. Smith Fl. Brt. p. 69. Aiton Hort. Kew, ed 2. v. 5. p. 431. Hooker Fl. Scot. p. 28.

ROOT perennial, strongly creeping: Leaves covered with a short pubescence: Stalks eighteen inches to two feet in height, the joints covered with a white woolly substance. *Flora. Lond.*

The present greatly resembles the *H. lanatus*, but may be readily distinguished from it, by its creeping root and woolly joints; it affects woody places, whilst the *lanatus* is generally found in meadows and pastures; this is also the smaller plant.

It is one of the most unprofitable and injurious Grasses that can be introduced into meadows or pastures, as its roots are as strongly creeping as those of the Common Couch Grass, and its foliage is generally rejected by Cattle;

Mr. Curtis remarks, that latterly he was induced to think better of this Grass, from the circumstance of its thriving in a dry sandy soil, and bearing the droughts of summer

TAB. 47.

better than most others. In soils that are of so barren a description as not to be able to support other Grasses, this may, perhaps, be introduced with advantage.

It flowers in July and August, and ripens its seed, which is produced in considerable abundance, towards the end of the latter Month.



Fig. 1. Grass, 2. Root, 3. Spikelet.

HOLCUS AVENACEUS.

Oat-like Soft Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER,

See TAB. 46.

Holcus avenaceus. Perfect floret superior, scarcely awned, antheriferous floret with a very long jointed awn, root knotty. Smith Fl. Brit. p. 90. Aiton Hort. Kew. ed 2, v. 5. p. 431. Hooker Fl. Scot. p. 28.

AVENA ELATION. Lin. Sp. pl. p. 117. Curtis Flora Lond. ed. 1.

ROOT perennial, fibrous, fibres numerous, crooked and closely matted together: Stalks two, three, or even four feet high, having four or five purple joints, round, smooth, the base often growing out and forming small bulbs: Leaves of the stalk six or seven inches to a foot in length, striated, smooth: Panicle long, upright, loose, shining; branches numerous, unequal, growing in some degree on one side: Spicules, containing two flowers, one perfect, the other only producing Anthers. *Flora. Lond.*

From the general appearance of this Grass, it was formerly considered as an *Avena* or Oat Grass, but having its flowers in pairs, the one perfect, and the other only antheriferous has occasioned its removal into the Genus *Holcus*. It is an abundant species, growing usually on banks, hedge rows, and on the confines of meadows, more frequently than in meadows themselves, in which it is occasionally met with in great profusion; it is early, extremely productive, and produces a plentiful aftermath; against these good properties, we must place its late flowering, and its propensity to become knotty or bulbous at the roots, frequently extending four to six inches up the stems. Notwithstanding these defects it is a valuable Grass, approach-

TAB. 48

ing in excellence the Meadow Fox-tail; it bears the scythe well, and readily throws up fresh stems when the first have been cut down; it grows rapidly after mowing, and is eagerly consumed by most kinds of Cattle; it is naturally coarse, but if cut early, makes excellent hay.

In certain soils the roots are constantly knotted, as represented in our figure, and in some parts of Kent and Surry, we have seen considerable breadths of arable land greatly injured by it, and it is often so troublesome in corn-fields, as to require to be eradicated after ploughing, like the Common Couch Grass. We have planted these knotted parts in good deep soil, when they have, after a time, entirely lost this appearance. The Farmer will do well to try this Grass, as it possesses numerous good qualities, and bids fair to answer the purpose of the Cultivator, much better than others that have been strongly recommended.



Pub. by G. Graves, Perham, N.H. 1. 1832.

MELICA UNIFLORA.

Wood Melic-Grass.

CLASS AND ORDER. TRIANDRIA DIGYNIA.

NATURAL ORDER.

Class. II. MONOCOTYLEDONS. Order I. GRAMINEÆ.

GENERIC CHARACTER.

Calix of two valves, membranous, generally two flowered, with the rudiment of a third foret. *Corolla* of two valves, awnless. *Seed* free, covered with the cartilagenous corolla.

SPECIFIC CHARACTER.

MELICA uniflora. Panicle branched, slightly drooping; flowers erect, calix containing only one perfect flower. Curtis Flora Lond. ed. 2. v. 2. Smith Fl. Brit. p. 91. Aiton Hort. Kew. ed. 2. v. 1. p. 152. Hooker Fl. Scot. p. 31.

ROOT perennial, fibrous: Stem a foot and a half or more in height: Leaves of the stalk, four or five, long, gradually tapering to a fine point: Membrane very short, a small ovate leaf with a long point, upright and coloured, rises from the fore part of the mouth of the sheath: Panicle loose, lowermost stalks growing two together, the one shorter than the other, bearing three or four flowers, the uppermost growing singly. *Flora Lond.*

The singular and elegantly coloured flowers readily distinguish this from all our native Grasses; it grows abundantly in most of the woods near London, particularly such as are moist and shady; as an elegant species, it merits a place in the garden of the Botanist, but like the following species, has no merits that claim the notice of the Agriculturist.

TAB. 49.

MELICA NUTANS.

Mountain Melic-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER,

See TAB. 49.

SPECIFIC CHARACTER.

MELICA nutans. Panicle simple; flowers not fringed, growing from one side, drooping; calix two flowered. *Lia. Sp. pl.* p. 98. *Curtis's Fl. Lond.* ed. 2. v. 2. *Smith Fl. Brit.* p. 93. *Aiton Hort. Kew.* ed. 2. v. 1. p. 152. *Hooker Fl. Scot.* p. 30.

ROOT fibrous, somewhat creeping: Stalks a foot to eighteen inches high, simple, upright, leafy, rough, striated, somewhat angular: Leaves at the bottom of the stalk short, scale like, increasing in length as they ascend, the upper ones long, narrow, pointed, and slightly rough: Panicle two or three inches long, bending down a little, with the flowers inclining one way, simple or rarely branched, peduncles capillary pressed to the stem, crooked, hairy when magnified, especially at the base of the flowers, where they are somewhat thickened. *Flora Lond.*

This elegant species is found in the more elevated parts of Great Britain, but is principally confined to the northern parts. From its elegance it merits a place in the gardens of the curious, and is easily cultivated and increased by parting and planting its roots in autumn; but it has no pretensions to the notice of the cultivator.

TAB. 50.





Pub. by G. Graves Peckham April 11 1823.

MELICA CŒRULEA.

Purple Melic-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER,

See TAB. 49.

SPECIFIC CHARACTER.

Panicle erect, coarctate; spikelets erect, oblong, cylindrical.

MELICA *cœrulea*. Curtis Flora Lond. ed 1. Smith Flora Brit. p. 93. Aiton
Hort. Kew, ed. 2, v. 1, p. 153. Hooker Flora Scot. P.I. p. 31.

ROOT perennial, fibrous, thick, crooked, and villous :
Stalk a foot or a foot and a half high, somewhat bulbous at
the base, upright, having but one knot, and that near the
base ; above naked and smooth : Leaves long, linear, of
a blueish green colour, the lower ones flat, the upper ones
somewhat rolled up, stiffish, hairy at the edges : Mem-
brane wanting : Sheaths short and striated : Panicle three
or four inches in length, branched ; the branches closing
together so as to form a kind of spike. *Flora Lond.*

Though differing materially in structure as well as in
general appearance from the two preceding species, this
seems better classed with the Melic-Grasses than with any
other genus, as in most of the spikelets the rudiment of
a third floret may be found.

It is a hard and late Grass, flowering from July to Sep-
tember, and does not appear calculated for agricultural
purposes. In some of the Scottish Isles it is manufactured
into fishing nets, and in some parts of the kingdom the
straws are made into brooms.

TAB. 54.



POA AQUATICA.

Water Meadow-Grass.

CLASS AND ORDER. TRIANDRIA DIGYNIA.

NATURAL ORDER.

Class II. MONOCOTYLEDONS. Order I. GRAMINEÆ.

GENERIC CHARACTER.

Calix of two valves. Corolla two valved; the valves sub-ovate, somewhat acute, awnless. Seed loose, covered with the Corolla.

SPECIFIC CHARACTER.

Poa aquatica. Panicle erect, much branched, spikelets of six flowers, which have seven ribs. Curtis Fl. Lond. ed. 2. v. 2. Smith Fl. Brit. p. 95. Aiton Hort. Kew. ed. 2. v. 1. p. 163. Hooker Fl. Scot. P. 1. p. 32.

ROOT perennial, creeping : Stalks from three to six feet high, upright, leafy, the thickness of a common Reed, round, smooth; joints yellow green : Leaves from half an inch to an inch in breadth, smooth, very finely grooved, keeled; the keel and edges rough; base of the leaves, marked on each side with a yellowish triangular spot : Sheath smooth, striated : Membrane short and obtuse : Panicle large, from six inches to a foot in length, upright, and much branched. *Flora Lond.*

The Water Meadow-Grass, is the largest of the Genus indigenous to this country, and is to be met with in the greatest abundance in almost every ditch and water course in the kingdom; it is one of the largest and most useful of our Grasses, constituting the most valuable produce of the pastures in the fenny countries, particularly in such parts as have been partially drained, but are subject to be occa-

TAB. 54.

sionally flooded, yet constantly retain a moist bottom ; in such places, the produce of this grass is prodigious, and it being a favourite food with cattle, is of the utmost consequence to the Grazier and Dairy Farmer.

Its rapid growth and powerfully creeping root, occasion it to become an extremely troublesome weed in streams and pieces of ornamental water, and will, without pains be taken to prevent it, soon choke up even large slow streams.

It bears the scythe well, and we have known it cut three times in a season, as green food for milch cows : the roots that are buried deep in the mud are extremely sweet, white and tender, and are greedily devoured by swine. It flowers late, and the spikes afford a nidus to several species of moths and other insects.





POA FLUITANS.

Floating Meadow-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER.

See TAB. 54.

SPECIFIC CHARACTER.

POA fluitans. Panicle nearly erect, slightly branched; Spikelets linear, adpressed, florets obtuse, seven nerved, with short intermediate ones at the base, root creeping. Fl. Brit. v. 1. p. 95. Aiton Hort. Kew. ed. 2. v. 1. p. 154. Hooker Fl. Scot. P. 1. p. 32.

FESTUCA fluitans. Curtis Flora Lond. ed. 1.

ROOT perennial, strongly creeping, throwing out numerous pale brown fibres, which strike deep into the mud: Stalk from one to three or more feet in length, according to its place of growth, creeping at the bottom, and throwing out young shoots, afterward becoming nearly erect, covered with the sheaths of the leaves, as far as the panicle; sheaths flattened, two edged, striated: Leaves broad and smooth, those of the young shoots upright, keeled and short; those of the stalk longer, flattish, weak and drooping, in the winter lying flat on the water: Panicle long, usually somewhat inclined, generally branched, though sometimes forming a kind of a spike, the spikelets mostly pressed close to the stalks, at others quite divergent; spikelets containing from nine to twelve flowers, which are pressed to the stalks. *Flora Lond.*

This species possesses many of the most valuable properties common to our best pasture grasses, but from its being entirely an aquatic, is rendered of much less value to the
TAB. 55.

Agriculturist than it would otherwise be. Its foliage is sweet, succulent, and abundant, is greatly relished by cattle and swine, and could it be cultivated, would be a most valuable addition to our meadows and pastures. It generally affects still waters or gently running streams, and in such situations often grows to the length of many feet, but when by accident it is removed into a field, or away from water, it completely alters its appearance, becomes very diminutive, and soon ceases to exist.

On some parts of the Continent of Europe, the seeds are collected and used for the purpose of food, and are sold under the name of **MANNA SEEDS**.

This grass is subject to a disease, called *Ergot*, which affects the seeds, and by which they become changed in size and shape. CURTIS in speaking of this circumstance says, "he found whole panicles, the seeds of which were affected in a singular manner; instead of being of their natural size and colour, they were enlarged to a very great degree; assumed a blackish colour externally, and were more or less incurvated. The surface of the seed was rough and chopped, they were light as to weight, and internally of a whiteish colour, insipid in their taste, but not disagreeable."

In the fenny countries this and the preceding species form the principle part of the produce of their watery meadows, and constitute the most valuable part of their crops, but from its being so completely an aquatic, it does not admit of cultivation.

TAB 35.



POA DISTANS.

Reflexed Meadow-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER.

See TAB. 54.

SPECIFIC CHARACTER.

Poa distans. Panicle divaricate, branches at length deflexed; Spikelets linear, of about five obtuse flowers, which are obsoletely five nerved. Smith Fl. Brit.v. 1 p. 96. Aiton Hort. Kew. ed. 2 v. 1. p. 158. Hooker Fl. Scot. P. 1. p. 33.

Poa retroflexa. Curtis Flora Lond. ed. 1.

ROOT perennial, fibrous: Stalks several, from six to eighteen inches in length, oblique, leafy, slightly elbowed below, round, and smooth: Leaves glaucous, smooth, pointed, radical ones, somewhat rolled up; stalk-leaves flat: Membrane short, obtuse, somewhat truncated, rarely bifid; sheaths smooth: Flowers growing in a panicle from four to six inches in length, spreading, branches unequal, ramified, somewhat crooked, finally much swollen at the base, and stretched out backwards; the lowermost about five in number. *Flora Lond.*

This species having no peculiar merits to recommend it to the notice of the cultivator, and as it possesses no noxious properties, it rarely claims his attention. It comes very near in appearance to the ANNUAL MEADOW GRASS, but is taller and more slender, and the curious appearance of the flower stalks after the bloom is over, will readily detect the species.

It flowers from June to September.

TAB. 56.



Bally, Schreber, Beckham, June 1802.

POA PROCUMBENS.

Procumbent Sea-Meadow-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER,

See TAB. 54.

SPECIFIC CHARACTER.

Poa procumbens. Panicle compact, lanceolate, one rowed, (rigid); spikelets lanceolate, of four or five flowers; stalks procumbent. Curtis Flora Lond. ed. 1. Smith Flora Brit. p. 96. Aiton Hort. Kew. ed. 2 v. 1. p. 154. Hooker Fl. Scot. p. 33.

ROOT perennial, fibrous: Stems many, from four to six inches or more in length, having two or three joints, for the most part procumbent, leafy, smooth, flattened towards the panicle: Leaves glaucous, short: Membrane short, surrounding the stalk, white, pointed: Sheaths glossy on the inside: Flowers in a panicle, two inches long, rigid. *Flora Lond.*

This grass was first pointed out as a species by the late Mr. Curtis, who found it growing on St. Vincent's Rock, Clifton Wells, in the year 1793, since which time it has been found in numerous other situations bordering on the sea; it forms tolerably close turfs: though it produces abundance of seed which readily vegetate, it has no properties that recommend it to the notice of the agriculturist.

TAB. 57.

POA RIGIDA.

Hurd Meadow-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER.

See TAB. 54.

SPECIFIC CHARACTER.

Poa rigida. Panicle lanceolate, disticho-secund, (rigid); spikelets linear, acute, of about seven flowers, nerveless. Lin. Sp. p. 101. Curtis Flora Lond. ed. 2. v. 2. Smith Flora Brit. p. 99. Aiton Hort. Kew. ed. 2. v. 1. p. 157. Hooker Flora Scot. p. 33.

ROOT annual, fibrous: Stalks numerous, from four to ten inches high, upright, bent at the bottom, smooth, with two joints: Leaves narrow, smooth, an inch and a half long, upright: Membrane short, obtuse and jagged at the top: Sheath smooth and finely grooved: Panicle slender, about an inch and a half long, rigid, the spicules in some degree growing one way, and containing seven or eight flowers. *Flora Lond.*

An exceedingly common species, growing abundantly on walls and barren places, is easily discovered by its harsh and rigid texture; has no merits that require notice, as it is too small to be productive; we have noticed it being eaten by Hares and Rabbits, where abundance of other more succulent food was at hand: This grass retains its verdure in very elevated barren spots, during the heats of summer, when almost all other plants in the same situations are burnt up.

TAB. 58.

Tab. 58.



Pub. by O. Strauss Fiedham. May 1. 1822



Pub. by G. Graves Peckham April 11 1893.

POA ANNUA.

Annual Meadow-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER,

See TAB. 54.

SPECIFIC CHARACTER.

Panicle divaricated, spikelets ovate, about five flowered, rather distant, five
nerved; stalks compressed.

Poa annua. Curtis Flora Lond. ed. 2. v. 2. Smith Flora Brit. p. 105. Aiton
Hort. Kew. ed. 2. v. 1. p. 155. Hooker Flora Scot. P. 1. p. 35.

ROOT annual and very fibrous; fibres spreading just
beneath the surface of the ground: Stalks numerous, some-
what procumbent, or when growing among other plants
nearly upright, and from six to nine inches high: Sheaths
flat, two edged, and smooth: Membrane small, obtuse:
Leaves very numerous, forming thick tufts, short, keeled,
smooth, frequently wrinkled transversely: Panicle of a
triangular shape, and flattish, the flowers growing mostly
to one side. *Flora Lond.*

The present is, perhaps, the most common species of
plant found in this country, being to be met with in almost
every soil and situation, producing its flowers throughout the
year, and being one of the first plants that make their ap-
pearance in walks, pavements, and on any soil that may
have been recently disturbed.

Its foliage is tender, sweet, and grateful to cattle, but as
it is an annual, does not attain any great size, and is liable
to be killed by severe frost; it is not likely to be of any
material service to the agriculturist, though it has been by
TAB. 67.

some writers much extolled; its diminutive size rendering it useless as a pasture grass, and its duration being annual, renders it unfit for grass plats, for which it has been much recommended. The objection of its being an annual, is somewhat weakened, by the circumstance of its continually throwing up fresh spikes, so that it may generally be found with young shoots and ripe seeds at the same time, and its seeds which are abundantly produced vegetate quickly, so that ere the parent plant decays, an abundant progeny are ready to occupy its place.

Whether from those favourable circumstances it may be worth cultivating remains to be proved, but we are not by any means sanguine of the benefits to result therefrom: we would suggest, that if, for experiment sake, it be tried, the best plan would be, to take up some tufts during wet weather, and divide them into as many parts as they can be separated into, each having a few fibres; these should be planted in shallow trenches, and the earth carefully pressed around the roots, and with this treatment they will become well established in the course of ten days or a fortnight.



FESTUCA GIGANTEA.

Gigantic Fescue-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER.

See TAB. 78.

SPECIFIC CHARACTER.

Panicle branched, drooping towards one side ; Spiklets compressed, lanceolate, flowers shorter than the awn, leaves linear, lanceolate.

Festuca gigantea. Smith Fl. Brit. p. 120. Aiton Hort. Kew. ed. 2. v. 1. p. 164. Hooker Fl. Scot. P. I. p. 39. Flora Lond. ed. 2. v. 3.

Bromus giganteus. Curtis Flora Lond. ed. 1.

Root perennial, fibrous : Stalks from three to six feet in height, upright, round, smooth, jointed, the joints purple : Leaves half an inch broad, of a bright green colour, smooth, shining underneath, furnished at the base with two pale purpleish brown appendages, which embrace the stalk : Sheath, below a little rough to the touch, but not hairy, above smooth : Membrane short : Panicle large, a foot or more long, loose, branches mostly in pairs, inclining one way, drooping and roughish : Spikelets lanceolate, containing about five flowers, half an inch or more in length, for the most part green, smooth, and bearded ; beards white, a little longer than the spicules, crooked and rough. *Flora Lond.*

This Grass bears frequently a strong resemblance to *Bromus asper*, with which it is often found growing, and will sometimes attain equal height with that species ; but is at all times easily distinguished by the appendages at the base of the leaves in *B. asper*, as well as the exceeding hairiness of the sheaths of that species.

This Grass affects rather moist situations, as hedge rows which bank a ditch, or such like places ; is but rarely eaten by cattle, and though a large and productive kind, seems too coarse for agricultural purposes.

It flowers from July till September.

TAB. 87.

FESTUCA LOLIACEA.

Spiked Fescue-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER,

See TAB. 78.

SPECIFIC CHARACTER.

Panicle spiked, two rowed, somewhat nodding; Spikelets distant, linear, many flowered, florets cylindrical, nerveless, and awnless.

Festuca loliacea. Curtis Flora Lond. ed. 1. Smith Fl. Brit. p. 122. Aiton Hort. Kew, ed 2. v. 1. p. 163. Hooker Fl. Scot. P. L. p. 40.

ROOT perennial, fibrous: Stalks upright, round, jointed, smooth, leafy: Leaves linear, tapering to a point, smooth, flat, striated: Sheaths long, striated, smooth: Membrane very short, surrounding the stalk: Spike long, rather drooping, the flowrets in two rows, many flowered, usually in a simple spike, sometimes branched, and sometimes with the florets flattened, broad, and so much resembling those of *Lolium perenne*, as to be readily mistaken for that Grass. *Flora Lond.*

This species comes so near to the Common Ray Grass, in root, stalks, leaves, and habit, as often scarcely to be distinguished from it; generally, it is a taller grass, and produces a much greater quantity of herbage; it prefers a rather moist bottom, and when cut early produces a valuable crop; but if suffered to remain growing until the whole bulk of the Meadow Grasses flower, it becomes rather harsh and stalky; with the exceptions, it appears equal in goodness to many of our best Grasses, and is well worth the attention of the Agriculturist.

TAB. 89.

It grows plentifully in moist meadows near London, and is readily propagated by parting its roots: This circumstance requires to be particularly noticed, as it very rarely produces fertile seed, which is also the case with *F. elatior*; on this account it has been considered by some Botanists as a hybrid production between *F. pratensis* and *Lolium perenne*, from both of which Grasses it is certainly distinct, though often nearly approaching the one or the other in habit.



FESTUCA PRATENSIS.

Meadow Fescue-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER.

See TAB. 78.

SPECIFIC CHARACTER.

Panicle spreading, branched; Spikelets linear, many flowered, floret cylindrical, awnless, leaves linear.

Festuca pratensis. Curtis Fl. Lond. ed. 1. Smith Fl. Brit. p. 123. Aiton Hort. Kew. ed. 2. v. 1. p. 165. Hooker Fl. Scot. P. I. p. 40.

Root perennial, fibrous: Stalks many, upright, from eighteen inches to two feet high, round, smooth, leafy: **Leaves** linear, spreading, pointed, striated; those on the upper part of the stalk rough on the back: **Sheaths** striated, smooth: **Membrane** short, surrounding the stalk: **Panicle** nearly upright, branched, spreading: **Spikelets** usually in pairs, of unequal length, mostly inclining to one side when in flower, and the flowers grow one way: **Spicules** flat, linear, and obtuse. *Flora Lond.*

Of the three species of *Festuca* contained in the present number this is the most valuable, inasmuch as it thrives better in meadows than either of the others, and though smaller, is upon the whole more productive, from the circumstance of its throwing up a greater number of radical leaves, which form what is generally known among Farmers by the appellation of bottom. Its foliage is juicy, sweet, and abundant, and in rather moist situations it will bear the scythe more than twice in the season; as a pasture grass it is equally valuable, as it is eagerly devoured by Cattle, Horses and Sheep. When growing, as it frequently

TAB. 90.

does, in large patches, without any direct attention to its cultivation, if the soil be moderately moist and rich, it will attain to almost twice its usual size : excepting in size it is less subject to vary than many of its more nearly allied species.

With respect to soil and situation, it grows readily in watery places, such as osier grounds, likewise on dry sandy places, and does not appear to be affected by a change of soil, otherwise than as above noticed.

Its time of flowering is rather late, rarely before the second week in June, and if the weather prove favourable, it ripens its seed at the end of the same month ; the quantity of seed produced is considerable, and is generally fertile, whereas, that produced by *F. loliacea*, and *F. elatior* is usually imperfect.

As mentioned of the Meadow Fox-Tail-Grass, the proper season for sowing or laying down this Grass is, immediately after the first rain that falls in the month of September.



FESTUCA ELATIOR.

Tall Fescue-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER,

See TAB. 78.

SPECIFIC CHARACTER.

Panicle spreading, very much branched; Spikelets ovate, lanceolate, many;
Leaves linear, lanceolate.

FESTUCA elatior. Curtis *Flora Lond.* ed. 2. v. 3. Smith *Fl. Brit.* p. 194.

Aiton *Hort. Kew.* ed 2, v. 1. p. 166. Hooker *Fl. Scot.* P. I. p. 40.

ROOT perennial, fibrous, slightly creeping: Stalks two to three feet high, or more, according to the richness of the soil, upright, round, smooth, jointed, mostly purple at the base: Leaves towards the root from a foot to eighteen inches long, and from one quarter to half an inch broad, tapering to a point above, and on the edges roughish, striated, on the under side keeled, a little glossy, embracing the stalk; the very base of a yellowish green colour: Membrane short, truncated: Leaves of the stalk shorter: Sheaths striated and smooth: Panicle six inches to a foot in length, at first mostly drooping, becoming afterwards nearly upright: Branches generally growing in pairs, unequal, for the most part sub-divided into smaller ones, tumid at the base; flower stalks angular, crooked, roughish, and glossy. *Flora Lond.*

A hardy, perennial, and very productive Grass, sometimes nearly equaling *Bromus asper*, or *Festuca gigantea*, in size; it usually affects moist meadows, the banks of streams, osier grounds, and such like situations; but in drier stations its size is by no means so considerable, though under any circumstances it must be considered a

TAB. 91.

large grass, and is one of those to which the attention of the Agriculturist would be well employed, as it possesses numerous valuable properties : it grows readily by dividing its root, and if cut early, we have no doubt would make good hay, as its foliage is juicy ; but if suffered (as is too common with Farmers,) to throw up its flower stalks, the root leaves become dry, and the produce is coarse, harsh, and of but little value.

The practice of permitting the whole crop to be deteriorated merely because some particular kinds have not thrown up the stems, is so absurd, that upon the common principle of interest we feel at loss to account for its continuance, otherwise than it has been the practice for ages past ; and Farmers are not easily induced to alter their old methods, or to adopt new ones, in their agricultural operations.

It flowers in June and July.



BROMUS MOLLIS.

Soft Brome Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER.

See TAB. 92.

SPECIFIC CHARACTER.

Bromus mollis. Panicle erect, close; spikelets ovate, subcompound; florets imbricated, depressed, pubescent; awn straight, the length of the glume; leaves very soft and pubescent. Lin. Sp. pl. p. 112. Fl. Lond. ed. 2. v. 2. Smith Fl. Brit. v. 1. p. 127. Aiton Hort Kew. ed 2. v. 1. p. 166. Hooker Fl. Scot. P. I. p. 41.

ROOT annual or biennial, small, fibrous: Stalk one to three feet high, upright; joints swollen: Leaves and sheaths covered with a close, soft pubescence: Panicle nearly upright, either close or spreading. *Flora Lond.*

In many rich meadows this species frequently forms a large portion of the produce, particularly in the environs of London, and is subject to great variety, in its appearance, according to the soil and situation in which it grows. Were such fields as abound with it, and its produce large, cut at the time the spikes of this grass make their appearance, it would tend greatly to the encrease of the crop; but the more common practice is to wait until it is in flower, at which time its herbage becomes dry, and nearly the whole is lost to the Farmer.

A Correspondent writes, "He has cultivated this plant for two seasons, and finds it to be perennial," should this be the case, it certainly would greatly enhance its value particularly for meadow grass. As pasturage it is not relished by cattle, and the plants are generally left

TAB. 94.

untouched, but was the seed collected and a breadth of it sown and cut for green food as soon as the ear makes its appearance, it might be found equally nutritious with Rye, in the place of which it might be substituted.

The seed of this plant is large and readily collected. We have met with some uncommonly fine specimens this year, whose produce of seed was more than that of Oats in general, and we are disposed to think very favourably of it, particularly for the purpose of green feed. Should our Correspondent prove correct in respect to the duration of this Grass, it will then become a question, whether it should be used as hay, or for immediate food. We have received from him some of his plants two years old, also seed which are now in a thriving state ; so far as we have noticed, it thrives well after mowing, and will sometimes, though rarely, throw up fresh flowering stems.



BROMUS ASPER.

Hairy Wood Brome-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER.

See TAB. 92.

SPECIFIC CHARACTER.

Panicle branched, drooping; Spikelets linear, lanceolate, compressed; Florets distant, sub-cylindrical, hairy, longer than the straight awn; Leaves uniform, the lower ones hairy.

Bromus asper. Flora Lond. ed. 2. v. 3. Smith Fl. Brit. p. 133. Aiton Hort. Kew. ed. 2. v. 1. p. 167. Hooker Fl. Scot. Pt. I. p. 42.

Bromus hirsutus Curtis Flora Lond. ed. 1.

ROOT annual or biennial, fibrous: Stalks from three to six feet high or more, upright, consisting generally of three joints, solid and finely grooved: Leaves a foot long, and half an inch broad, beset with hairs principally on the edges and midrib: Sheaths striated, covered with numerous long hairs, which are somewhat rigid and bent backwards; Panicle a foot long, spreading, the branches growing two or three together, hanging down, rough, and often crooked. *Flora Lond.*

This is the largest and tallest of our native Grasses, of very elegant growth, but far too coarse for agricultural purposes. It is usually found in hedge rows, or the borders of woods, and from its extreme hairiness is easily detected; often when growing among rank herbage, or among bushes, it will attain the height of eight or nine feet.

Cattle generally reject it. Flowers in July and August.

TAB. 101.

large grass, and is one of those to which the attention of the Agriculturist would be well employed, as it possesses numerous valuable properties : it grows readily by dividing its root, and if cut early, we have no doubt would make good hay, as its foliage is juicy ; but if suffered (as is too common with Farmers,) to throw up its flower stalks, the root leaves become dry, and the produce is coarse, harsh, and of but little value.

The practice of permitting the whole crop to be deteriorated merely because some particular kinds have not thrown up the stems, is so absurd, that upon the common principle of interest we feel at loss to account for its continuance, otherwise than it has been the practice for ages past ; and Farmers are not easily induced to alter their old methods, or to adopt new ones, in their agricultural operations.

It flowers in June and July.



BROMUS DIANDRUS,

Upright Annual Bromo-Grass.

CLASS, ORDER, NATURAL ORDER, & GENUINE CHARACTER.

See TAB. 92.

SPECIFIC CHARACTER.

BROMUS diandrus. Panicle erect, spreading, rarely branched; spikes many flowered; florets lanceolate, nerved, furrowed, diandrous. Curtis Flora Lond. ed. 2. v. 1. Smith Fl. Brit. p. 135. Aiton Hort. Kew, ed. 2. v. 1. p. 169. Hooker Fl. Scot. p. 43.

ROOT small, fibrous, annual: Stems a foot to a foot and a half high, upright, strait, round, smooth, leafy, with three or four joints: Leaves at first slightly pubescent, afterwards quite smooth: Panicle but rarely branched: Flowers rough, awns strait, the length of the spikelet. This species has much the habit of *B. Sterilis*, but is readily distinguished from it, by its upright spike, and its flowers being only furnished with two anthers; it is common in many parts of Great Britain, growing in similar situation with the preceding species, and also on walls and rocks, in the latter situations it is exceedingly dwarf, and if much exposed the awns assume a bright pink hue, and the whole plant is apt to become red. *Flora Lond.*

When cultivated it is inclined to form thick close turfs, its foliage is sweet and succulent, and is readily eaten by cattle; it will bear the scythe, and after mowing is often disposed to throw up fresh flower stems. It generally flowers in May and June, and ripens its seed in July, and was it a perennial grass, it would be a valuable addition to our stock of what are termed artificial grasses.

TAB. 102.

We are strongly prejudiced in its favor, and should it ever come into practice to sow our pastures or meadows annually, this would be one of the best grasses for the purpose; if sown previous to the autumnal rains, it yields an early crop of valuable herbage, of which most kinds of cattle seem partial. In fields that have been for some years occupied by Rye Grass, and the plants are becoming thin, the seed of this grass thinly broadcast, in the autumn will add greatly to the spring crop. When cultivated in gardens it is strongly disposed to become a weed.

Tab. 110.



Bot. by G. Fowler. Fackham. Florid. 1872.

AVENA FLAVESCENS.

Yellow Oat Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER.

See TAB. 107.

SPECIFIC CHARACTER.

AVENA flavescens. Panicle much branched, loose; Spikelets of about three flowers, which are longer than the unequal valves of the calix, root creeping. Linn. Sp. pl. p. 117. Curtis Fl. Lond. ed. 1. Smith Fl. Brit. p. 142. Aiton Hort. Kew. ed. 2. v. 1. p. 172. Hooker Fl. Scot. p. 44.

ROOT perennial, creeping; Stalks one to two feet high, upright, round, jointed, and covered with numerous short hairs: Leaves flat, and with the sheaths covered with fine hairs: Panicle three or four inches in length. During the expansion of the flowers the panicle is spread as wide as possible, of a yellow green colour and upright, after the flowering is over, closing together with the spicules mostly inclined one way, and becoming of a shining yellow brown colour. *Flora Lond.*

The colour of this Grass is so conspicuous as readily to point it out: it affects dry soils, and is often found in elevated situations; it is the least of this family that are indigenous to this country; being tolerably productive and rather early, it seems likely to make good sheep pasture, is sometimes met with in meadows in considerable abundance, and being a perennial Grass must be considered as rather a valuable addition, both as quality and quantity to the crop.

TAB. 110.

It flowers in June and July, and ripens its seed in August, grows readily from dividing its roots; it is found on hedge banks in pastures and meadows, particularly such as are elevated, and is abundant on many of our Downs or Sheep Walks.



ARUNDO PHRAGMITES

Common Reed.

CLASS AND ORDER. TRIANDRIA DIGYNIA.

NATURAL ORDER.

Class I. MONOCOTYLEDONS. Order I. GRAMINEÆ.

GENERIC CHARACTER.

Calix of two valves. Corolla surrounded with silky hairs. Seed covered with the Corolla.

SPECIFIC CHARACTER.

Arundo Phragmites. Calicine glume five flowered; flowers longer than the calix; panicle loose. Lin. Sp. pl p. 120. Smith Fl. Brit. p. 144. Aiton Hort. Kew. ed. 2. v. 1. p. Hooker Fl. Scot. p. 1. p. 27.

ROOT perennial, creeping: Stalks annual, upright, round, jointed, leafy, smooth, six feet or more in height: Leaves long, smooth, tapering to a point, and generally inclining one way, beneath glaucous: Panicle large, drooping, spreading, and very much branched. The foliage is often found variegated like the common Ribbon-Grass.

From the circumstance of this species being in considerable request for a variety of economical purposes, it is better known than most other Grasses.

But few plants are more widely diffused than the Common Reed, being found in almost every part of Europe, and the temperate parts of Asia and America. Being almost entirely an aquatic, it cannot be cultivated except in low swamps, or on the borders of large rivers, where the ground is always moist, and occasionally overflowed. Land of this description may be rendered

TAB. 114.

very productive by being planted with the Reed; for which purpose pieces of the root may be placed in the ground, in rows, at a foot to eighteen inches apart; choosing a wet season for forming the plantation; they grow rapidly, and very soon get such complete possession of the soil as almost entirely to exclude every other plant.

Reeds are cut at the end of autumn, and are often left out in heaps, or stacks, all the winter without shelter, and in the following spring are cleared from the withered leaves and the flowers, for sale; but the Reeds would be rendered more durable, and they would require less trouble in clearing, was this done as soon as the stems are thoroughly dry, and they would be more valuable for being sheltered from the weather, either by being stacked and thatched, or any other shelter; as when exposed to long continuance of wet, without any opportunity for the water to run off, they soon begin to perish. For thatching, Reeds are much more durable than straw; they form excellent screens for gardens, and are in great request with brick-makers, throughout the country. The young shoots, if cut off from the root where not exposed to the light, make an excellent pickle, and may be preserved with cauliflower, or green pickle.

A very considerable variety of insects resort to this plant, either for food, or shelter; and the seed is often entirely consumed while in the husk; and in most of the heads whilst in blossom, may be found the larva of some of the smaller kinds of moths and flies.



LOLIUM PERENNE.

Perennial Darnel, Rye or Ray-Grass.

CLASS AND ORDER. TRIANDRIA DIGYNIA.

NATURAL ORDER.

Class II. MONOCOTYLEDONS. Order I. GRAMINEÆ.

GENERIC CHARACTER.

Calix of one valve, fixed, many flowered.

SPECIFIC CHARACTER.

Lolium perenne. Spikelets much longer than the calix; florets awnless, linear, oblong-compressed; root perennial. Lin. Sp. Pl. p. 122. Smith Fl. Brit. p. 148. Aiton Hort. Kew. ed. 2. v. 1. p. 174. Flora Lond. v. 4. Hooker Fl. Scot. p. 45.

ROOT perennial, somewhat creeping, fibrous: Stems from one to two feet high, erect, smooth, leafy: Leaves from three to six inches long, pointed: Sheath long, compressed, smooth: Ligule short, projecting a little beyond the base of the leaves, obtuse, membranaceous: Spike mostly erect, compressed, simple: Spikelets previous to the expansion of the flowers pressed close to the stem, alternate, sessile. The whole plant frequently assumes the appearance of wheat, and is subject to considerable variation in the form of the spikelets; in some the florets grow all together at the extremity; in others, branched, and many flowered, in others with three flowers only; these varieties are not constant, but are occasioned by the greater or lesser luxuriance of soil. *Flora Lond.*

Ray or Rye Grass is of very general occurrence in meadows, pastures, cultivated grounds by road-sides, and is not confined to any soil or situation. It has been long cultivated, and has the merit of being the first Grass, of which the seeds were collected for the purpose of agricultural

experiment: it appears to have been cultivated in this country previously to the year 1577, and it is only of late years any others of our natural Grasses have been tried as substitutes in forming and improving artificial pastures.

This Grass grows readily on any soil, and requires but little previous preparation, and is certainly one of the hardiest of our cultivated Grasses; it comes to perfection early in the spring, particularly so in dry and poor soils, but to have its full value known it requires to be fed off early and frequently, so as to keep down the flowering stems, for so soon as these make their appearance, the plant is rejected by cattle: the same must also be observed were this Grass is intended for hay, as if the flower stalks are suffered to attain their full height, the herbage or bottom, as it is termed, loses its colour, and becomes dry, and cattle of all kinds show a considerable dislike to it; but if cut early it will afford good feeding very shortly afterwards, and will continue in heart, in rich moist meadows, for several seasons.

The general complaint urged against it of its producing little more than stalks or bents, will be only found to apply when the plant grows in high or dry situations, or after it has been in possession of the ground for a series of years; in rich meadows its foliage is more abundant, and it is the general opinion of agriculturalists that it is highly acceptable and nutritious to cattle. For a permanent meadow, we consider this plant as very inferior to many others, for the reasons above stated; but in fields that are laid down for only three or four years, this may answer very well, but as the roots become matted the produce decreases, till at last the crop is next to nothing.

I received the following practical remarks on the comparative merits of this Grass from Mr. George Sinclair, of Woburn. "There is considerable diversity of opinion prevailing respecting the merits and comparative value of Rye-Grass. It produces abundance of seed, which is easily collected, and vegetates on most kinds of soil, under

circumstances of different management : it soon arrives at perfection from seed, and produces, in its first years of growth, a good supply of early herbage, which is much liked by cattle. These merits have, doubtless, upheld it till the present day in practice, and it will probably, for some time, continue a favorite Grass with many farmers. The latter-math of Rye-Grass is very inconsiderable, and the plant impoverishes the soil in a high degree, if the culms, which are invariably left untouched by cattle, are not cut before the seed advances towards perfection ; if this is neglected, the field, after Midsummer, exhibits only a brown surface of withered straws.

On comparing the nutritive properties of this Grass with those of the Cock's-foot-Grass, they are found inferior to the latter in proportion of five to eighteen ; and also inferior to the Meadow Fox-tail-Grass in the proportion of five to twelve ; and inferior to the Meadow Fescue-Grass in the proportion of five to seventeen. In the comparisons from which the above proportions arose, it was necessary to omit the seed crops for the truth of comparison : But the seed of the Meadow Fox-tail (*Alopecurus pratensis*) being often defective, and the plants of the Meadow Fescue (*Festuca pratensis*) not arriving at perfection so soon as those of *Lolium*, their superiority over Rye-Grass is somewhat lessened, with respect to their value as alternate husbandry Grasses. For permanent pasture, however, the above proportional values will be found correct, as Rye-Grass is but a short-lived plant, seldom continuing more than six years in possession of the soil ; but is continued by its property of ripening an abundance of seed, which is but little molested by birds ; this being suffered to fall, vegetates among the root leaves of the permanent pasture Grasses.

“ One peck of Rye-Grass seed, with fourteen pounds of red or white clover per Acre, is generally considered sufficient for sowing artificial pastures.”

After a long course of experience, this Grass has fallen in general estimation, in most parts of England, and seems

likely, in a few years, to be quite out of use, still we should strongly press it upon the agriculturist to try if an improvement may not be effected, by raising plants expressly cultivated for *seed* only, on good rich soil, with rather a moist bottom, as we have repeatedly found that a change of seed raised in this manner has been attended with considerable advantage, and likewise to try the effects of sowing poor soils with seed raised on rich soils, and vice versa.



Pub by G. G. & Co. London May 3. 1822.

HORDEUM MURINUM.

Wall or Mouse Barley-Grass.

CLASS AND ORDER. TRIANDRIA DIGYNIA.

NATURAL ORDER.

Class I. MONOCOTYLEDONS. Order I. GRAMINEÆ.

GENERIC CHARACTER.

Calix two-valved, valves lateral, one flowered, growing three together; the lateral one with Anthers or Pistil, intermediate ones perfect. *Corolla* two-valved, awned.

SPECIFIC CHARACTER.

HORDEUM murinum. Calicine valves of the intermediate floret, linear, lanceolate, ciliated; those of the lateral florets setaceous, scabrous. Lin. Sp. Pl. p. 126. Curtis Flora Lond. ed. 2. v. 1. Smith Fl. Brit. p. 153. Aiton Hort. Kew, ed. 2. v. 1. p. 179. Hooker Fl. Scot. p. 46.

ROOT annual, fibrous: Stalks numerous, a foot to eighteen inches high, crooked as if broken at the base, afterwards becoming upright, leafy; joints large and paler coloured than the stalks: Leaves four to six inches long, covered with a soft down, furnished at the base with two small, white, pointed appendages, which embrace the stalk: Membrane short and blunt: Spikes four or five inches long, of a pale green colour, flat, resembling those of common barley. *Flora Lond.*

This Grass, when eaten by cattle, often occasions sore mouths, from the awns sticking into their gums, and being of a brittle texture they readily break, and cause violent inflammations: cattle are not fond of it; but, as it frequently grows by road-sides, it is greedily seized by horses, and the awns being very sharp will often make the mouth bleed. Being rarely, if ever, found in meadows or pastures,

TAB. 125.

it consequently, but seldom, occurs in hay ; was it otherwise it would be of considerable importance to the Farmer to extirpate it.

On walls, on the edges of foot-paths, and on the borders of fields, it is extremely common, flowering and seeding during the most part of the Summer : the seed is sometimes much injured by a small kind of beetle, which devours the embryo.



Poa annua L.

HORDEUM PRATENSE.

Meadow Barley-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER.

See TAB. 125.

SPECIFIC CHARACTER.

Hordeum pratense. Calicine valves all setaceous and rough. Smith Fl. Brit. p. 156. Aiton Hort. Kew. ed. 2. vol. 1. p. 179. Hooker Fl. Scot. p. 46.

ROOT perennial, fibrous; in dry situations sometimes becoming bulbous: Stalks from one to two feet high, upright, slender, leafy, smooth, round, slightly striated: Leaves spreading, linear, acute, roughish: Sheath somewhat swollen, striated, smooth: Membrane small: Spike smaller and not so close as in the Wall Barley-Grass.

In some meadows this species abounds, and forms a large part of the crop: it is a taller and more delicate grass than the preceding; but, as it is neither so early or productive as many other Grasses, and the bristles or awns are equally rough when dry with the foregoing, it should be introduced with caution, particularly in meadows that are intended for hay.

It flowers in July, and its heads are not likely to be injurious in the young state, being frequently eaten by cattle without any ill effects.

TAB. 126.

HORDEUM MARITIMUM.

Sea Barley or Squirrel-tail-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC CHARACTER,
See TAB. 125.

SPECIFIC CHARACTER.

HORDEUM *maritimum* Calicine valves slightly rough, the interior one of the lateral florets semi-lanceolate, the others setaceous. Smith Flora Brit. p. 156. Aiton Hort. Kew. ed. 2. v. 1. p. 179. Flora Lond. v. 4. Hooker Flora Scot. p. 46.

ROOT annual, small, fibrous : Stalks four to eight inches high, crooked at the base, slender, jointed and leafy : **Leaves** small, narrow, waved, glaucous green, the margin roughish : Sheaths long, cylindrical ; the upper ones long, and somewhat inflated : Spike an inch and a half long, slender, flattish, of a pale green colour. *Flora Lond.*

There is a strong resemblance in the three species of *Hordeum* we have here figured, and which are the whole of the genus found in Great Britain ; the present species is smaller than either of the others, but where the *Murinum* grows on a wall, or is starved, it is hardly to be distinguished from this without the use of a magnifying glass.

In fields, banks, the sides of ditches, and on sands near the sea, this grass is often met with in great abundance, and not unfrequently is found among hay, a circumstance that cannot be too carefully guarded against, as the awns of this, though small, are rougher than either of the other kinds. As it is an annual plant, it is worth the Farmers pains to extirpate it from his land ; which may be done by cutting off the flowers before the seed is ripe, which is not till the end of July or August, these should be collected and burnt.

TAB. 127.





Ridby & Graves. Pockham. June. 11877.

TRITICUM REPENS.

Creeping Wheat, or Common Couch-Grass.

CLASS, ORDER, NATURAL ORDER, & GENERIC, CHARACTER.

See TAB. 129.

SPECIFIC CHARACTER.

TRITICUM repens. Valves of the Calix much nerved, with from four to eight awned flowers, leaves plain, root creeping. Smith Fl. Brit. v. 1. p. 158. Aiton Hort. Kew. ed. 2. v. 1. p. 181. Hooker Fl. Scot. P. 1. p. 44.

Root perennial, jointed, fibres tomentose: Stalks many from the same root, upright, slender, round, one to three feet high, striated and leafy: Leaves spreading, often growing from one side only, linear, pointed, flat, the margins on the upper side rough: Sheaths striated, smooth: Membrane short: Spike erect, two to four inches long, often resembling ears of wheat.

This common species is abundantly found in almost every field and garden; where, if the soil be tolerably light, it will extend its shoots many feet in length, frequently perforating any succulent roots that may be in its way, as, Potatoes, Jerusalem Artichokes, &c. It is justly ranked among the foulest weeds, and where it has once obtained possession of the soil, but few plants are more difficult to extirpate, as its roots penetrate deep into the earth, and when broken or divided, every piece will grow, and that after they appear quite wilted and dry, so that the most certain mode of destroying them is by fire.

TAB. 130.

It produces its foliage early, bears the severest weather uninjured, and most kinds of cattle readily eat it, yet it has not merit sufficient to counterbalance its bad properties ; in summer, though it retains its verdure in the hottest seasons, yet its leaves become hard and dry, and are then left by cattle. On some parts of the Continent the roots are collected in quantities, and sold in the markets for fodder : we cannot determine how these roots may be acted upon by the climate, but with us, cattle generally must be hard pressed before they would touch them.

The most effectual method of getting rid of this troublesome weed is by ploughing, and carefully picking out the roots, by hand, to be burnt : fallowing in a dry summer has been recommended, but we have known the roots to retain their vital properties, after being dried for the herbarium, and laid by for some months

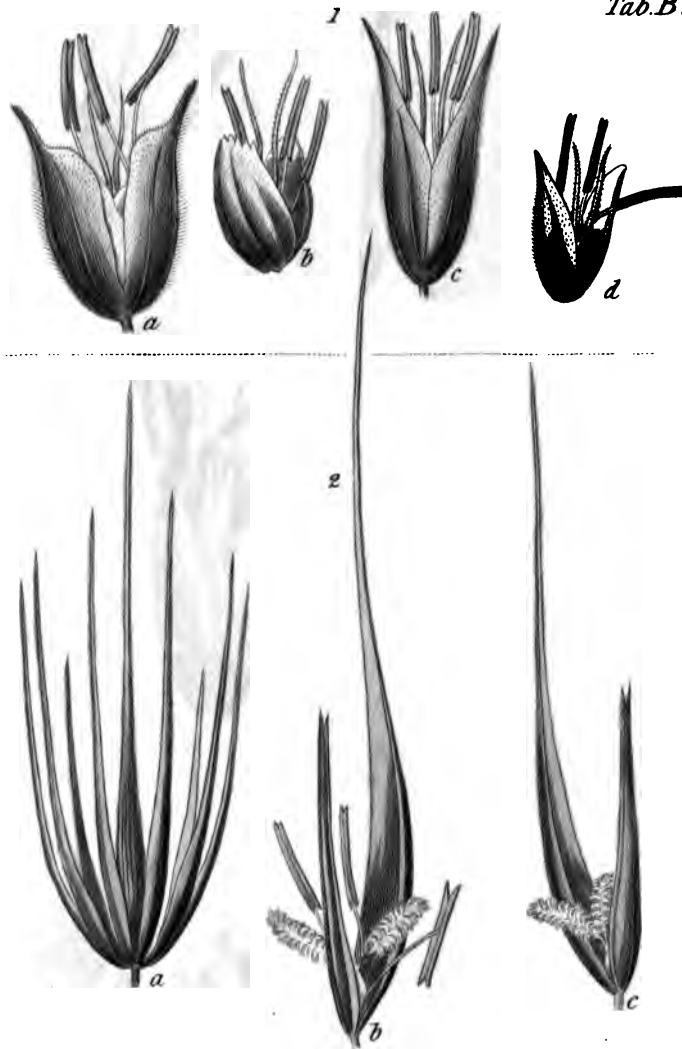
The appearance of Couch Grass is liable to vary considerably, from the situation and soil in which it grows, and particularly in the form of the spike, as may be observed in our figure. We have seen it growing by the side of a heap of manure, where its luxuriance was so great that the spikes were as large as full sized ears of wheat, and fourteen were produced from the same root. Its common names are Couch, Squich, or Twitch-Grass.

Tab. A.



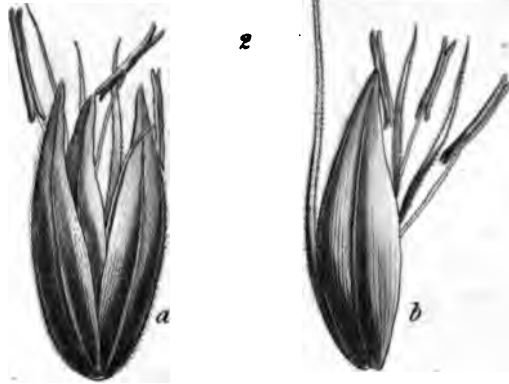
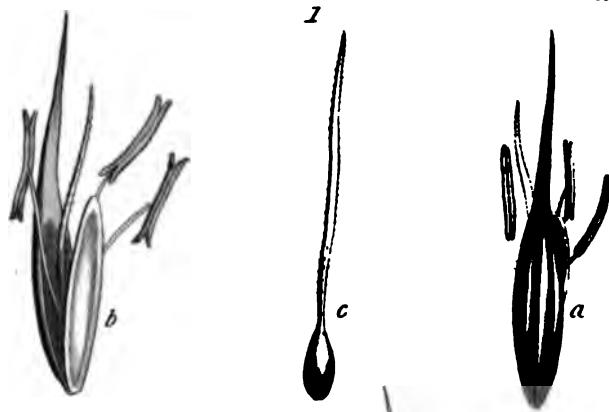
Pub. by G. Graves Peckham, April 1883.

Tab. B.



Pub. by G. Graver Peckham April 1893.

Tab. C.



Pub. by G. Graves Peckham April 11 1883.

